Berufungsvorträge Mathematics and Finance

Ort: Leopols Schmetterer Seminarraum des Instituts für Statistik und OR

1010 Wien, Universitätsstraße 5, 3. Stock

Mittwoch 1. Juni, 14:00 -16:00: Kostas Kardaras

Financial equilibria in markets where heterogeneous agents with numeraire-invariant preferences act

The question of general equilibrium in an incomplete financial market model is undertaken. Economic agents have numeraire-invariant preferences, but different subjective beliefs and stochastic consumption clocks. The market contains a borrowing and lending account in zero net supply, as well as a "stock" in positive unit net supply providing certain dividend stream, exogenously specified. A characterization of existence and uniqueness of equilibrium is provided in terms of stochastic differential equations. The proposed framework naturally allows for equilibria where assets in positive net supply contain bubbles, even in the case of complete markets with unconstrained acting agents. Furthermore, the obtained results shed light on the potential Markovian structure of equilibrium models.

Freitag 10. Juni, 8:30 – 10:30: Umut Cetin

Dynamic Markov Bridges and Their Applications to Market Microstructure

I will give a review of recent results on the construction of Markov bridges and their relations to stochastic filtering theory and partial differential equations. These results will then be applied to Kyle-Back type asymmetric information models with and without default. The effect of a risk averse market maker will also be discussed .

Freitag 17. Juni, 14:00 – 16:00 Joachim Grammig

Creative Destruction and Asset Prices

We introduce Schumpeter's idea of creative destruction into asset pricing. The key point of our model is that small-value firms are more likely to be destroyed during technological revolutions, while large-growth firms provide a hedge against creative destruction risk. The expected return difference between assets with the highest and lowest exposure to creative destruction risk amounts to 8.6 percent annually. A model including market return and invention growth as priced factors accounts for a large portion of the cross-sectional variation of size and book-to-market sorted portfolios and successfully prices HML and SMB.

Mittwoch 22. Juni, 14:00 – 16:00 Miklos Rasonyi

Behavioural investors in multiperiod market models

We consider the problem of optimal investment for an investor whose
behaviour is described by cumulative prospect theory. Most of previous
research focussed on one-period models. It turns out that the multiperiod case exhibits a number of new phenomena.
We provide easily verifiable conditions for the well-posedness of this
problem and show the existence of optimal strategies. We also have a look at what happens in a class of continuous-time models.

Mittwoch 22. Juni, 16:30 – 18:30 Robert Stelzer

Derivative Pricing in the Multivariate Ornstein-Uhlenbeck type Stochastic Volatility Model

In this talk we consider a multivariate stochastic volatility model for financial assets based on positive semi-definite Ornstein-Uhlenbeck type processes. After an introduction into the motivations behind and the details of the model, we discuss the pricing of financial derivatives focusing especially on pricing via Laplace transforms and we show that calibration to observed prices becomes feasible when choosing appropriate parametric assumptions. We illustrate this with a data example from foreign exchange markets.
Finally, extensions of the model and possible alternatives are briefly discussed.

Freitag 24.Juni, 14:00 – 16:00 Nikolaus Hautsch

Predicting Vast-Dimensional Asset Return Covariances Using High-Frequency Data

We analyze to which extent the use of high-frequency data can improve out-of-sample forecasts of vast-dimensional asset return covariance matrices. Daily covariances are estimated based on high-frequency data of the S&P 500 universe employing a blocked realized kernel estimator as proposed by Hautsch et al (2011). We propose modeling the dynamics of covariance matrices on the basis of a multi-scale spectral decomposition where volatilities, correlation eigenvalues and eigenvectors follow individual dynamics on different frequencies. Positive definiteness and well-conditioning of covariances are ensured by an imposed factor structure. Covariance forecasts are constructed based on predicted variances and eigenvalues which are projected on a locally constant eigenvector basis. We show that high-frequency data are beneficial for forecasts over horizons of at least a week. Moreover, forecasts of realized portfolio variances can be improved by (i) using efficient underlying covariance estimates, (ii) using model-based predictions of individual covariance components, and, (iii) by mixing information from different time horizons. Resulting forecasts significantly outperform various competing benchmarks employing low-frequency (long-term) data. However, for predictions of the inverse of the covariance matrix used in optimal minimum variance portfolio allocations, the merit of high-frequency information is diluted due to the particular importance of appropriate regularization and covariance targeting.